

Artificial Photosynthesis Current Research & Development

The provided article discusses the current problems with making energy & provides a promising new alternative to our current energy sources. Review the article and be prepared to discuss the following points:

1. Current challenges to using solar energy inputs to provide usable energy.
2. Methods in this article used to overcome those challenges.
3. Why knowledge of biology, physics, chemistry & technology are required to develop such methods.
4. A specific example of why understanding the metabolic & light requirements of organisms is crucial to this method.
5. At least 2 technical questions about materials, methods, etc.
6. At least 2 ethical questions about materials, methods, etc.
7. Figure 1 in the article depicts the simplest course of the reaction discussed in the article. The figure on the next page shows the steps the bacteria use to convert $\text{CO}_2 + \text{H}_2$ into CH_4 , methane. Using your notes on the steps of the 2 phases of photosynthesis, answer the following:
 - a. What is taking the place of Pigments in the methods?
 - b. What is taking the place of PS2 water-splitting enzyme function?
 - c. Why are the bacteria necessary?
 - d. How is the bacterial cycle similar to photosynthesis reactions?
 - e. Some have called this entire process “artificial photosynthesis”. Evaluate whether this is an appropriate name, providing justifications as needed.

Methanogenesis

